Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
A National Broadband Plan for Our Future	)	GN Docket No. 09-51

Comments of National LambdaRail, Inc.

National LambdaRail, Inc. ("NLR"), by and through its attorneys, hereby submits its comments in the above-captioned matter.

Introduction

On April 8, 2009, the Commission released its Notice of Inquiry (FCC 09-31) ("NOI") in the above-captioned matter whereby it seeks comments for the purpose of developing a national broadband plan ("Plan") in accordance with Section 6001(k) of the American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (2009) ("ARRA"). As required by that Section, the Plan must "ensure that all people of the United States have access to broadband capability and establish benchmarks for meeting that goal."[1] Specifically, the Plan must include the following:

- An analysis of the most effective and efficient mechanisms for ensuring broadband access by all people of the United States.

- A detailed strategy for achieving affordability of such service and maximum utilization of broadband infrastructure and service by the public.

[1] ARRA at §6001(k)(2).

> • An evaluation of the status of deployment of broadband service, including progress of projects supported by the grants made under BTOP.
>
> • A plan for use of broadband infrastructure and services in advancing consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, worker training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes.[2]

The Commission asks, therefore, "How robust are broadband capabilities in backbone and feeder networks throughout the country?"[3] The Commission also asks whether it should "give priority to funding the construction of networks, or is ongoing support for operations and maintenance essential?"[4]

The purpose of these comments is to demonstrate to the Commission that although construction may be necessary in certain instances, a robust, neutral, nationwide backbone infrastructure is already in place for a fraction of the cost of constructing a new network or using the network of commercial carriers. It is NLR.

What is NLR?

NLR is a non-profit organization that was incorporated to advance and serve the research, clinical and educational goals of its members and other institutions through its dedicated, nationwide and advanced network infrastructure[5] that is connected to regional

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[2] *Id.* at (A)-(D).

[3] NOI at ¶17.

[4] *Id.* at ¶41.

[5]Exhibit A to these comments is a map of the infrastructure. For a complete description of NLR, *see* http://www.nlr.net/. *See also Rural Health Care Support Mechanisms, Order on Reconsideration* (FCC 07-6), 22 FCC Rcd 22555 (2007) (*"RHCPP Reconsideration Order")* where the Commission authorized funding interconnections to NLR under the Commission's Rural Healthcare Pilot Progarm.

(broadband) optical networks ("RONs").[6] In turn, the RONs are connected to individual users, such as "community anchor institutions" that are one of the targets of the Broadband Technology Opportunities Program under the ARRA.[7] Thus, NLR provides the national backbone, or wide-area network component, of end-to-end broadband capacity.

The foundation of the NLR infrastructure is a dense wave division multiplexed (DWDM) national optical footprint using Cisco Systems optical electronic systems, with a maximum capacity of 160 wavelengths nationwide across roughly 12,000 route miles of fiber. Each wavelength can support transmissions of 10 billion bits per second ("10 Gbs"). The NLR wavelengths have been implemented using 10 Gbs Ethernet LAN PhY (physical layer), a technology and architecture that had previously been limited to metropolitan area networks and SONET (Synchronous Optical Network) technology employed by traditional telecommunications networks.[8]

Unlike a network of leased, finished and managed capacity provided by an underlying carrier, NLR is not constrained by third party rules.[9] Instead, NLR owns,

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[6]*See* Exhibit B for a list of the RONs connected to NLR (as well as other available RONs.) The members who own and govern NLR also own and operate 21 RONs. RONs provide the facilities and technical direction necessary to guarantee end-to-end interconnectivity and interoperability. They also support the advanced applications of their respective communities.

[7]ARRA at §6001(f)(3).

[8]*See* http://www.nlr.net/services/infrastructure.php.

[9]Uniquely, therefore, NLR meets the broadband policies of the Commission as set forth in its Policy Statement on network neutrality. *Appropriate Framework for Broadband Access to the Internet over Wireline Facilities* (FCC 05-151), 20 FCC Rcd 14986 (2005) ("Policy Statement"); in particular:

> • To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to access the lawful Internet content of their choice.

manages and controls its network and does not impose any acceptable use policy. In fact, the Bylaws of NLR specifically provide that the only acceptable use policy permitted by NLR is that which is "the least restrictive as necessary to preserve" the tax exempt status of NLR.

From "best effort" networks for general daily use, such as telehealth, to "deterministic" networks for very large data-intensive science projects, to "breakable" networks for network research, users of NLR's network can tailor NLR's resources and capacity to meet their application requirements. NLR is therefore able to provide users with multiple networking capabilities (including shared networks, private networks, research networks, production networks and experimental networks) and comprehensive sets of capacity that are physically and operationally independent from one another but are on the same nationwide optical fiber footprint.

The NLR Infrastructure As An Integral Part of the Plan

An integral part of the Plan should be to take full advantage of NLR's infrastructure that has already been deployed and is fully operational across the nation. Simply stated, NLR stands ready to make its backbone available for the public on a non-discriminatory, neutral basis without any acceptable use policy. The inclusion of the

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> • To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to run applications and use services of their choice, subject to the needs of law enforcement.
>
> • To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to connect their choice of legal devices that do not harm the network.
>
> • To encourage broadband deployment and preserve and promote the open and interconnected nature of the public Internet, consumers are entitled to competition among network providers, application and service providers, and content providers.

Id. at ¶4. (Footnotes omitted.)

NLR network as an integral part of the future broadband plans of the nation is therefore compelling. It would significantly advance the goals of the Plan envisioned by Section 6001(k) of the ARRA.

Although NLR's infrastructure primarily serves the research and education community, it can also serve the public's need for high speed, reliable broadband services to empower American consumers and industry in the 21st century information economy. Over thirty state and multi-state RONs, listed in Exhibit B, are already interconnected with NLR or can easily be interconnected, forming a truly nationwide broadband backbone that, with federal assistance, can bring broadband connectivity at the highest speeds to Americans in every state of the Union.

In addition, NLR's infrastructure meets the Commission's *Policy Statement* which ensures that broadband networks "are widely deployed, open, affordable, and accessible to all consumers."[10] In particular, NLR's infrastructure can permit consumers to access lawful Internet content, run applications, connect legal devices and use services of their choice.[11]

NLR's infrastructure would become a public interstate network infrastructure. It would become "America's Network." Coupled with the connectivity of the NLR infrastructure to existing and new RONs, it would quickly provide the advanced network infrastructure so badly needed in this country but at a fraction of the cost of constructing a new network or using the networks of existing carriers. Businesses, institutions, broadband service providers and their customers could access the RONs at multiple

[10] *Policy Statement* at ¶4.

[11] *See supra* note 9.

points at a nominal cost and terminate through other RONs across the nation, enabling service providers and the public to obtain inexpensive broadband access using an already existing leading edge network at state-of-the-art speed and efficiency.

Rationale

Just as in the late 1950s the deployment of the Eisenhower Interstate Highway System became the engine that spurred monumental and beneficial changes in our society and has helped drive our economy for nearly five decades, so too can the deployment of a broadband public interstate network infrastructure be a key driver of economic and technological development for the next decade and beyond.[12] Indeed, the Commission recently called broadband infrastructure "the interstate highway of the 21st century for small towns and rural communities, the vital connection to the broader nation and, increasingly, the global economy."[13]

Forty years ago, a professor at the University of California Los Angeles and colleagues at Stanford University and the University of California Santa Barbara gave birth to what we now call the Internet by successfully demonstrating the ability to transmit data over long distances. Between 1970 and 2000, it was the partnership of universities and laboratories, with federal grants, and in cooperation with telecommunications providers, that first deployed these new capabilities through leased networks, like ARPANET, NSFnet and Internet2. They were created to specifically serve their research missions. Although these networks served a good and valuable

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[12] *See* http://www.fhwa.dot.gov/interstate/homepage.cfm. *See also* the Commission's "Bringing Broadband to Rural America Report on a Rural Broadband Strategy" (Doc. 291012A1) dated May 22, 2009 ("*Rural Broadband Strategy Report*") at ¶33 *et seq.*

[13] *Id.* at ¶25.

purpose, over the past decade the research and education community understood the importance of owning and managing a network infrastructure. Consequently, they created NLR and the RONs with capabilities and capacity to serve the greater needs of our country and spur economic development.

Over-reliance on private sector investment has resulted in an underdeveloped, second-rate broadband infrastructure. Clearly, public-private sector partnerships are urgently needed to give the world's greatest economy the world's greatest public broadband infrastructure.[14] NLR provides that partnership. It provides the needed nationwide infrastructure that is already in place and ready to be used, with demonstrated leadership, knowledge and expertise to operate, maintain and expand that infrastructure for the public good.

Using NLR's infrastructure as America's Network with federal support would transform NLR into an open-access, interstate, public infrastructure that would serve as the keystone of broadband connectivity for economic expansion and societal advancement over the next decade and beyond.

Conclusion

It took well over a decade to deploy the interstate highway system. Over the past decade, about 20 groups of universities and other higher education nonprofit entities across this country have deployed, owned and managed state and multi-state regionally-based network infrastructures -- RONs -- to serve primarily their respective research and

[14] *See id.* at para. 120 where the Commission states that "[a] complementary government role in broadband deployment can yield advantages that a free market solution cannot achieve alone" and "[f]inding creative solutions to overcome the hurdles presented by high depolyment costs will require the development of a multi-faceted approach, including, among other things, collaborative efforts among federal, Tribal, state, and local governments, community organizations, businesses, and individuals; federal and state funding; [and] government ownership or sponsorship . . . " (Footnotes omitted.)

education communities. In May 2003, several of these groups joined forces to create NLR. For the past six years, NLR has deployed, owned and managed a nationwide network infrastructure backbone to link these RONs and their users together.

NLR and the RONs comprise a uniquely robust, cohesive, secure and comprehensive broadband network infrastructure that can be used not only to serve the nation's research and education community, but also to deliver a panoply of healthcare, public safety, public information and content services (*e.g.*, the Library of Congress, Public Broadcasting Service, *etc.*), as well as to become America's Network, the broadband network engine to spur economic development on a local, statewide, regional and nationwide basis.

The ARRA and the Commission's newly released *Rural Broadband Strategy Report* have brought recognition and focus to "the benefits of universal broadband access to the nation as a whole and the concomitant lack of robust broadband deployment in many parts of the country."[15] As the Commission recognized in authorizing grantees in its Rural Health Care Pilot Program to interconnect to NLR on a subsidized basis, NLR offers a "not-for-profit nationwide backbone network, dedicated to educational, clinical, and research goals."[16] NLR can now offer the nation that robust broadband backbone network that is such a critical component of the Plan.

In light of the NOI's recognition of both "the incredible value of ubiquitous broadband, and the difficulties that lie ahead in ensuring its availability,"[17] the Commission should not miss the opportunity to utilize a readily available, secure, high-

[15] *Rural Broadband Strategy Report* at ¶43.

[16] *RHCPP Reconsideration Order,* 22 FCC Rcd at n.45.

[17] NOI at ¶ 123.

speed and user-neutral national backbone that would afford a tremendous giant step toward realization of the goals of the ARRA and the Plan. NLR urges the Commission to incorporate federally-funded interconnection with and utilization of NLR's national broadband network as an integral part of that Plan.

Respectfully submitted,

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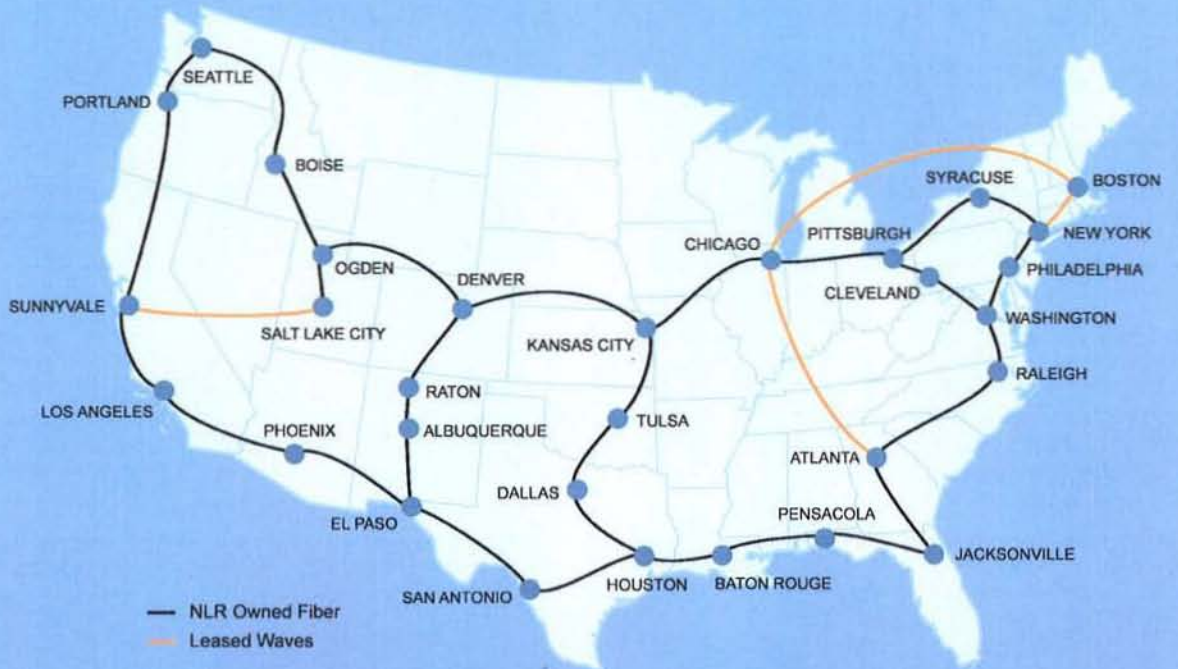
Exhibit A

National LambdaRail

www.nlr.net

America's Vision. America's Network.



National LambdaRail's nationwide advanced optical network infrastructure is capable of meeting the needs of the most demanding scientific, research, health, education, public information, public safety and economic development goals of the U.S. Because NLR owns the underlying fiber optic cable and optical equipment, as well as other networking equipment, it can cost-effectively implement multiple, diverse experimental and production networks on its nationwide optical fiber footprint with unprecedented flexibility and responsiveness.

Exhibit B

RONs Connected to NLR and Other Available RONs

RONs Connected to NLR	States Served by the RONs
CENIC	California, Nevada, Arizona
PNWGP	Washington, Oregon, Hawaii, Alaska, Montana, Idaho
FRGP	Colorado, Utah, Wyoming, Idaho
OneNET	Oklahoma, Arkansas
ILIGHT	Indiana
ONECOMMUNITY	Northeast Ohio
PSC/3ROX	Western Pennsylvania, West Virginia
NeLR	New York, Massachusetts
MATP/MAX	Virginia, Maryland and DC
NCREN	North Carolina
SLR/SoX	Georgia, Alabama, Tennessee, Kentucky
ORNL/FUTURENET	Atlanta to Chicago
FLR	Florida
LONI	Louisiana, Mississippi
LEARN	Texas
NMLR	New Mexico

Other Available RONs	
NEVADA NET	Nevada
NORTHERN TIER	North Dakota, South Dakota, Montana, Idaho
IRON	Idaho, Eastern Washington
GPN	Nebraska, Kansas, N. Dakota, S. Dakota, Arkansas
MOREnet	Missouri
BOREAS	Wisconsin, Minnesota, Iowa
WiscREN	Wisconsin
OMNIPOP	Big 10 Universities
MREN	Illinois
Merit	Michigan
OSCnet	Ohio
MAGPI	Eastern Pennsylvania, Delaware, New Jersey
NYSERNet	New York
OSHEAN	Rhode Island
NoX	Massachusetts, Vermont, New Hampshire, Maine